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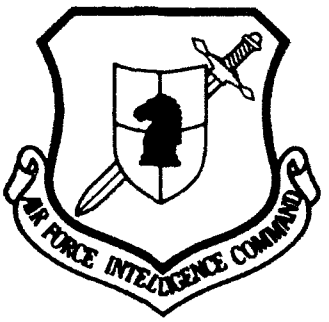
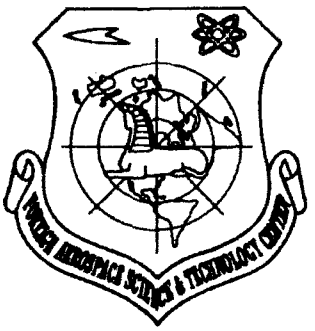


THE EFFICIENCY OF CONTINUOUS OUTPUT OF SOME TITANIUM-DOPED GEM-CRYSTAL LASERS HAS EXCEEDED 1 W



HUMAN TRANSLATION

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THE EFFICIENCY OF CONTINUOUS OUTPUT OF SOME TITANIUM-DOPED GEM-CRYSTAL LASERS HAS EXCEEDED 1 W.

/447*

By use of the Induced Furnace Up-pumping Method (IFUS) developed by ourselves, a new technique enables us to grow a titanium-doped gem crystal which can emit pulses in the forward as well as in the backward direction in the preparation of a continuous laser beam transmission. Since December of 1991 after it first appeared in our country, the continuous transmission of a titanium crystal laser (1) with hydrogen ion laser-pumping has reached a laser output efficiency of 303 mW and the threshold efficiency of 1.5 W. Recently, the crystalline mass grown by us has made another step forward to form a continuously lasing apparatus which acquired new progress in the output efficiency and resonance-harmonization capability.

By use of several different doping concentrations (Ti^{3+}0.94 Wt % - 0.2 Wt %) and different lengths for the crystalline rods (6.5 mm - 26 mm), a series of continuous laser experiments was carried out with the hydrogen laser pump. Among them Ti:Al_2O_3 laser rod of magnitude roughly of 3.5 x 3.5 x 15 mm^3; α_{490} = 2.0 cm^{-1}, using A-240 hydrogen ion-laser pump, made in China (wavelength: 488 nm and 514 nm, total line), gave a maximum output efficiency reaching

* Numbers in margins indicate foreign pagination. Commas in numbers indicate decimals.

1.25 W, a threshold efficiency below 1 W, total body transformation efficiency of 12.5 % and a slanting ratio efficiency of 15%.

For the most recently acquired continuous chain laser output, the existing parameters are being presently measured.

(Chinese Academy of Science, Shanghai Optical Instrument Laboratory No. 8, F. Teng, Q, Qiao, W. Zhi and C. Zhang.

Laser Technology Laboratory, W. Lieu, Q. Zhang and P. Tao,

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